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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/539,475

Applicant(s)

DEHGHAN ET AL.

Examiner

CUONG V. LUU

Art Unit

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 14 and 16-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 14 and 16-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The Examiner would like to thank the Applicant for the well-presented response, which was useful in the examination. The Examiner appreciates the effort to perform a careful analysis and make appropriate amendments to the claims.

Claims 1-11, 14, 16-29 are pending. Claims 12-13 and 15 have been canceled. Claims 1-11, 14, 16-29 have been examined. Claims 1-11, 14, 16-29 have been rejected.

Response to Arguments

1. The Applicant's arguments, see page 10, filed 8/15/2008, regarding the objections of claims 4 and 19 have been withdrawn in light of amendments to these claims.
2. The Applicant's arguments, see page 10, filed 8/15/2008, regarding the 35 USC 101 rejections of claims 16 and 29 have been fully considered, but they are not persuasive. The Applicant's amended these claims in attempt to resolve the 35 USC 101 rejections; however, in doing so, the Applicant causes confusion with claiming in the preamble that "an apparatus comprising a simulation tool for simulating" and later claiming that "the apparatus comprising a software platform". It is not clear what the apparatus really comprises. As a result, the apparatus may be interpreted as comprising a software platform, which is considered program per se. 35 USC 101 rejection remains on these claims for claiming program per se.
3. Applicant's arguments with respect to claims 1-11, 14, 16-29 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-11 and 14, 16-29 are rejected under 35 U.S.C. 101.

4. Claim 1 is rejected under 35 U.S.C. 101 because the claimed invention is not useful. The claim is not useful because it only tries to resolve a mathematical formula, and the final step does not show how the solution is to be used in simulating or designing a communication network.
5. Claim 1 is rejected under 35 U.S.C. 101 because the claimed invention is an abstract idea, solving a mathematical formula.
6. Claim 16 and 29 are rejected under 35 U.S.C. 101 because the claimed invention is directed to program per se. The Applicant causes confusion with claiming in the preamble that "an apparatus comprising a simulation tool for simulating" and later claiming that "the apparatus comprising a software platform". It is not clear what the apparatus really comprises. As a result, the apparatus may be interpreted as comprising a software platform, which is considered program per se. 35 USC 101 rejection remains on these claims for claiming program per se.
7. 2-11 and 14 inherit the defects of claim 1

8. Claims 17-28 inherit the defects of claim 16.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-11 and 14, 16-29 are rejected under 35 U.S.C. 112, 2nd paragraph.

9. Claims 1, 16, and 29 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the steps to design a communication network. The claims recite in the preamble "simulating or designing a communication network". If interpreted as "designing a communication network", there are not steps to design a communication network.
10. 2-11 and 14 inherit the defects of claim 1.
11. Claims 17-28 inherit the defects of claim 16.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 8-11, 14, 16-18, 21-23, 25-27, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over the AAPA in view of Lu et al. (Fast Recursive Filtering with Multiple Slow Processing Elements, IEEE Transactions on Circuits and Systems, Vol. CAS-32, No. 11, Nov. 1985).

12. As per claim 1, the AAPA teaches a method of simulating a communication network supporting communication between a plurality of communication units, wherein the method comprises the step of:

employing a simulation tool to resolve a mathematical formula relating to an operation of the communication network (p. 4 lines 15-23);

but does not teach varying an electrically variable input signal by a plurality of interconnected electronic components in a hardware of the simulation tool (300) such that an output signal of the interconnected electronic components has resolved at least one iterative mathematical formula in hardware without employing multiple iterations.

Lu teaches this limitation (p. 1123 Fig. 9 and p. 1124 col. 1 section III Practical Considerations, paragraph 1 to col. 2 paragraphs 1-4. In these paragraphs, Lu teaches implementing recursive IIR filter using hardware. A recursive system is a system that implements a formula that requires iterative technique in solving as stated by the AAPA on page 21 lines 11-18).

It would have been obvious to one of ordinary skill in the art to combine the teachings of the AAPA and Lu. Lu's teachings would have utilized the high speed of the calculation for high-speed application so that arbitrary performance goal can be met (section I. Introduction first 10 lines).

13. As per claim 2, the AAPA and Lu in combination teach a method of simulating a communication network according to claim 1, wherein the simulation tool further comprises a software platform, and utilizes a series of mathematical formula at least one of which has no closed form solution (the AAPA, p. 4 lines 15-23), but does not teach:

resolving, by the plurality of interconnected electronic components, the at least one mathematical formula that has no closed form solution.

Lu teaches this feature (p. 1123 Fig. 9 and p. 1124 col. 1 section III Practical Considerations, paragraph 1 to col. 2 paragraphs 1-4. In these paragraphs, Lu teaches implementing recursive IIR filter using hardware. A recursive system is a system that implements a formula that requires iterative technique in solving as stated by the AAPA on page 21 lines 11-18).

14. As per claim 3, the AAPA in combination with Lu teach the step of providing, by the software platform, one or more input signals to the hardware platform, relating to the one or more mathematical formula to be resolved (p. 5 lines 8-23).
15. As per claim 8, the AAPA teaches the method is further characterized by the step of simulating a variation of a location of communication units as a function of time by adapting one input signal level (p. 4 lines 3-13. Transmit power levels are employed or input here. This reads onto the limitation).
16. As per claim 9, the AAPA teaches the method is further characterized in that the one or more input signal levels relate to any one or more of the following:
 - (iv) A power emission level from a subscriber unit and/or base station (p. 3 lines 6-12).
17. As per claim 10, the AAPA teaches the method is applied to a wireless CDMA communication network (p. 4 lines 15-23).
18. As per claim 11, the AAPA teaches the method is applied to the following:
 - (i) A static simulation of a wireless communication network (p. 3 lines 2-12. the AAPA teaches simulation using parameters, i.e. location of MSs and activity of MSs. This teaching implies static - stationary MSs, so it reads onto this limitation);
19. As per claim 14, the AAPA teaches a storage medium storing processor-implementable instructions for controlling a processor to carry out the method steps of claim 1 (p. 3 lines 28-33. These lines teach running simulation algorithm for simulating a communication

network according to the steps recited in claim 1. This implies a storage medium storing processor-implementable instructions for controlling a processor to carry out the method steps of claim 1).

20. As per claim 16, these limitations have already been discussed in claim 1. They are, therefore, rejected for the same reasons.

21. As per claim 17, these limitations have already been discussed in claim 2. They are, therefore, rejected for the same reasons.

22. As per claim 18, these limitations have already been discussed in claim 3. They are, therefore, rejected for the same reasons.

23. As per claim 21, these limitations have already been discussed in claim 8. They are, therefore, rejected for the same reasons.

24. As per claim 22, these limitations have already been discussed in claim 9. They are, therefore, rejected for the same reasons.

25. As per claim 23, Lu teaches the hardware platform comprises a plurality of substantially only two electronic components adder functions and multiplier functions (p. 1123 Fig. 9).

26. As per claim 25, the AAPA and Lu in combination teach the hardware platform is configured to resolve an equation of a form (discussed on claim 1):

$$I_m = \sum_{n=1, n \neq s}^{Nbs} P_n \times \frac{1}{L_n} + (P_s - P_m) \times \frac{1}{L_s} \times a$$

27. As per claim 26, the AAPA and Lu in combination teach the hardware platform is configured to resolve an equation of a form (discussed on claim 1):

$$I_m = \sum_{n=1, n \neq s}^{Nn} P_m \times \frac{1}{L_n} + (P_s - P_{m_lp_BS}) \times \frac{1}{L_s}$$

28. As per claim 27, these limitations have already been discussed in claim 13. They are, therefore, rejected for the same reasons.

29. As per claim 29, these limitations have already been discussed in claim 12. They are, therefore, rejected for the same reasons.

Claims 4-6 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the AAPA in view of Lu as applied to claims 3 and 18 above and further in view of Eriksson et al. (The Selection and Application of an IIR Adaptive Filter for Use in Active Sound Attenuation, IEEE Transactions on Acoustics, Speech, and Signal Processing, Vol. ASSP-35, No. 4, 4/1987).

30. As per claim 4, the AAPA and Lu do not teach configuring the hardware platform, by the software platform, by setting at least one parameters from a group of:
- the mathematical formula to be resolved,
 - at least one path-loss parameter

at least one from a group of:

an energy per bit over noise and interference spectral density, a chip rate for a code division multiple access, CDMA, system, a data rate of a transmission from a base station to a mobile station.

Eriksson teaches configuring the hardware platform, by the software platform, by setting at least one parameters of the mathematical formula to be resolved (p. 435 col. 1 section Hardware paragraph 1. In this paragraph, Eriksson teaches using TI TMS32010 Digital Signal Processor to implement a recursive IIR filter. This teaching inherits the limitation of configuring the hardware platform, by the software platform, by setting at least one parameters of the mathematical formula to be resolved since the TMS32010 Digital Signal Processor requires programming the IIR filter's coefficients using software external to it.)

It would have been obvious to one of ordinary skill in the art to combine the teachings of the AAPA, Lu, and Eriksson. Eriksson's teachings would have provided means for modification of coefficients of the recursive hardware system, in this case for adaptive application (p. 434 col. 1 paragraph 3).

31. As per claim 5, the AAPA teaches the one or more input signals are in the form of an electrically variable signal, for example a voltage level, where a level of the electrically variable signal corresponds to a transmit power level of a communication unit operating in the communication network where the power level is one from a group of: a transmit power level, and a receive power level (p. 4 lines 3-13. Transmit power levels are employed or input here. This reads onto the limitation).

32. As per claim 6, the AAPA teaches the at least one mathematical formula relate to an air-interface of a wireless communication network having communication units that are capable of transmitting at differing radio frequency transmit powers, wherein resolving at least one iterative mathematical formula comprises converging a number of transmit power level or receiving power levels (p. 4 lines 3-13 and lines 25-33).
33. As per claim 19, these limitations have already been discussed in claim 4. They are, therefore, rejected for the same reasons.
34. As per claim 20, these limitations have already been discussed in claim 5. They are, therefore, rejected for the same reasons.

Claims 7 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the AAPA in view of Lu as applied to claims 1 and 16 above, and further in view of Soliman et al. (U.S. Patent 6,111,857).

35. As per claim 7, the AAPA teaches, on p. 3 lines 2-12, simulation using parameters, i.e. location of MSs and activity of MSs. Simulation using parameters, i.e. location of MSs and activity of MSs in an ordinary practice would involve time varying or real time conditions comprising power level and noise interference. Nevertheless, the AAPA does not explicitly make these statements.

Soliman teaches the step of adapting an operational communication network, in a real-time manner, in response to one or more output (col. 3 lines 12-15. The planning tool that determines numerous system power levels as a function of dynamic – regarded as time

varying or real time – variables like user load and signal interference reads onto this limitation).

It would have been obvious to one of ordinary skill in the art to combine the teachings of the AAPA, Lu, and Soliman. Soliman's teachings would have helped plan for power consumption and control for a wireless network as required by a spread spectrum system (col. 2 lines 63-64).

36. As per claim 28, these limitations have already been discussed in claim 7. They are, therefore, rejected for the same reasons.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over the AAPA in view of Lu as applied to claim 23 above, and further in view of Rappaport et al. (U.S. Patent 5,233,628).

37. As per claim 24, the AAPA and Lu do not teach the interface comprises a plurality of sample and hold functions and 'decoder logic' building blocks. However, Rappaport teaches this limitation (Fig. 4 elements 57a and 57b and col. 5 lines 57-62).

It would have been obvious to one of ordinary skill in the art to combine the teachings of the AAPA, Lu, and Rappaport. Rappaport's teachings would have provided binary numbers representing analog signal to the digital portion of the hardware for computation.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cuong V. Luu whose telephone number is 571-272-8572. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah, can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. An inquiry of a general nature or relating to the status of this application should be directed to the TC2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Cuong V Luu/

Examiner, Art Unit 2128

/Hugh Jones/

Primary Examiner, Art Unit 2128